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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/665,481	09/22/2003	Kazunari Kimino	R2180.0178/P178	5528

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DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP
2101 L Street, NW
Washington, DC 20037

EXAMINER	
KENNEDY, JENNIFER M	

ART UNIT	PAPER NUMBER
2812	

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/665,481	KIMINO, KAZUNARI	
	Examiner	Art Unit	
	Jennifer M. Kennedy	2812	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *10 November 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *1-6 and 11-28* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7, 8, 10* is/are rejected.

7)☒ Claim(s) *9 and 29* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 29 is objected to because of the following informalities: In the last line of the claim, the second period should be removed. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claim 7 is rejected under 35 U.S.C. 102(b) as being anticipated by Janai et al. (U.S. Patent No. 5,679,967).

Janai et al. discloses a method for manufacturing a semiconductor device, comprising:

forming a plurality of fuse elements (438) on a semiconductor wafer substrate, said semiconductor wafer substrate (not labeled, see Figure 5A, column 9, lines 35-45)

forming at least one dielectric layer(905) over said plurality of fuse elements with a plurality of openings over respective fuse elements (see Figure 5A);

forming a layer of etching barrier resin (900) in an opening corresponding to a location of at least one fuse element not to be selectively disconnected; and

implementing dry and/or wet etching steps using said layer of etching barrier resin as a mask such that at least one fuse element not to be selectively disconnected is not etched, and wherein said at least one fuse element selected to be disconnected is at least partially etched (see column 9, line 65 through column 10, line 10).

The examiner notes that photoresist is defined by Merriam Webster's Dictionary, Tenth Edition, as a photosensitive resin that loses its resistance to chemical etching when exposed to radiation and is used especially in the transference of a circuit pattern to a semiconductor chip during the production of an integrated circuit

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Janai et al. (U.S. Patent No. 5,679,967) in view of Tateyama et al. (U.S. Patent No. 5,919,520).

Janai et al. discloses the method as claimed and rejected above including adding photoresist to replenish the opening corresponding to said location of said fuse element not to be selectively disconnected, but does to disclose the method of depositing the photoresist.

Tateyama et al. disclose the method wherein the step of forming said layer of etching barrier resin comprise scanning at least one discharging nozzle for discharging said raw etching barrier resin while discharging droplets of said raw etching barrier resin and hardening said raw etching barrier resin (see column 3, lines 20-33 and column 5, line 59 through column 6, line 47, and column 9, lines 20-65).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to deposit and harden the photoresist of Janai et al. by the method of Tateyama et al. because as Tateyama et al. discloses it will allow for a uniform thickness (see column 2, lines 28-35).

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Janai et al. (U.S. Patent No. 5,679,967) in view of Kimura et al. (U.S. Patent Appl. 2002/0080004).

Janai et al. discloses the method as claimed and rejected above, but does not disclose the method wherein the plurality of fuse elements comprise polysilicon. Kimura et al. teaches the method wherein fuses may be made of metal or polysilicon. It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the plurality of fuse elements are formed from polysilicon because Janai et al. teaches that while metal is disclosed as forming the fuse that any electrically conducting material may be used for the fuses (see Janai et al. column 12,lines 20-26) and as Kimura et al. teaches polysilicon is a conventional material for fuses, and may be used in place of metal (see Kimura et al. [0005]).

Allowable Subject Matter

Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 29 is allowed, except for the minor typographical error cited in the claim objections

The following is a statement of reasons for the indication of allowable subject matter: the prior art, either singly or in combination, fails to anticipate or render obvious, the method, including the limitations wherein the forming of said layer of etching barrier resin includes discharging droplets of said raw etching barrier resin of an amount smaller for an area in vicinity of a periphery, than other portions, of said opening in combination with the other claim limitations.

Response to Arguments

Applicant's arguments filed November 10, 2004 have been fully considered but they are not persuasive.

Applicant argues that Janai et al. does not teach forming a layer of etching barrier resin in an opening corresponding to a location of at least one fuse element not to be selectively disconnected. The examiner maintains that Janai et al. teaches forming a layer of etching barrier resin (900) in an opening corresponding to a location

of at least one fuse element (438) not to be selectively disconnected (see Figure 5A, 5B, wherein the opening above the right hand side fuse (438) has been filled with etching barrier resin (900)).

Applicant also argues that Janai et al. discloses three separate methods. The examiner believes that Applicant has misconstrued the reference. The examiner notes the Janai in column 9, line 67 through column 10 line 6 discloses three steps of a single method of disconnecting a fuse. Even if Janai et al. teach three separate methods of disconnecting the fuse, the third method (as defined by Applicant) etches the fuse as claimed. The Applicant characterizes this method as completely removing the fusible element by etching, and therefore concludes that Janai et al. does not teach etching at least a portion of it. The examiner disagrees and maintains that etching to remove the fuse is, indeed, etching *at least* a portion of it.

Applicant also argues that Janai et al. teaches forming the radiation etch-resistant layer over all of the fusible links, and therefore does not teach forming a layer of etching barrier resin in an opening corresponding to a location of at least one fuse element not to be selectively disconnected. Again, the examiner maintains that Janai et al. teaches forming a layer of etching barrier resin (900) in an opening corresponding to a location of at least one fuse element (438) not to be selectively disconnected (see Figure 5A, 5B, wherein the opening above the right hand side fuse (438) has been filled with etching barrier resin (900)). The examiner notes that the claim at hand does not preclude forming etching barrier resin in other openings corresponding to fuses that are to be selectively disconnected.

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., etching *only* a portion of the fuse, forming the etching barrier resin *only* in the openings corresponding to a location of a fuse element not to be disconnected) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Further, Applicant argues the combination of Janai et al. and Tateyama et al. The examiner maintains that the two references are analogous art, i.e. semiconductor processing. Further, the examiner notes that Tateyama et al. is relied upon to show a method of forming an etching barrier resin, the same type of etching barrier resin that Janai et al. teach is formed, and has provided reasons for combining suggested from the reference (see Tateyama et al., column 2, lines 28-35). The method of Janai et al. would certainly benefit from a layer with uniform thickness, even if the layer is removed, since it would prevent the formation of keyholes in the apertures 422, thus preventing unintended disconnecting of other fuses, and generally to help to prevent possible overetching when etching the fuse, which Janai et al. is clearly concerned with (see Janai, column 10, line 15 through column 11, line 40). Further, the examiner notes that Janai et al. does not require removing etching barrier resin, rather Janai et al. teaches the layer is *preferably* a short term passivation layer. This could refer only to the portion that is removed above the fuse to be disconnected.

The arguments provided for claims 9 and 10 with respect to the Janai et al. reference have been addressed with respect to claim 7 above.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Kennedy whose telephone number is (571) 272-1672. The examiner can normally be reached on Mon.-Fri. 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Jennifer M. Kennedy
Patent Examiner
Art Unit 2812

jmk